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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,925	04/12/2001	Ronald Patrick Doyle	5577-230	3856
20792	7590	09/17/2004	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			CHANG, SUNRAY	
PO BOX 37428			ART UNIT	
RALEIGH, NC 27627			PAPER NUMBER	

2121

DATE MAILED: 09/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/833,925

Applicant(s)

DOYLE ET AL.

Examiner

Sunray Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2001 and 16 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 04122001.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

1. Claims 1 – 33 are presented for examination.

Claims 1 – 33 are rejected.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 – 6, 10, 11, 16 – 19, 23 – 25, and 30 – 33 are rejected under 35 U.S.C. 102(b) as being anticipated by A. Dahlin et al. (“A Robust and Scalable Internet Server” Ericsson Telecom AB in Stockholm, Sweden, May 1998, and referred to as Dahlin hereinafter).

3. **Regarding independent claims 1, 30, and 32**, Dahlin teaches,

- A method of distributing workload between servers, [load-balances over a LAN, Page 1, Col. 2, Line 25]
- Receiving requests [listen to several UDP and/or TCP sockets] over a first connection [Front-ends], parsing requests [parses any incoming data] to determine application layer information associated with each of the requests [analyze incoming requests]; [Page 4, Line 26 – 28]
- Selecting destination servers [same host or on other hosts] for corresponding ones of the requests [schedule them to be run] based on the determined application layer information associated with each of the requests [analyze incoming requests]; [Page 4, Line 28 – 29]

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- Distributing requests to the corresponding selected destination servers [schedule them to be run] over second connections [back-ends] associated with respective ones of the destination servers [same host or on other hosts]. [Page 4, Line 26 – 29]
4. **Regarding dependent claim 2,**
- An HTTP 1.1 connection [as needed by HTTP 1.1, Page 5, Col. 1, Line 5 – 6].
5. **Regarding dependent claim 3,**
- Determining a start point and an end point [schedule] for each of the requests [incoming requests] within the first connection [Front-ends]; [Page 4, Line 28 – 29]
  - Identifying application layer information [parses any incoming data] within each of the requests [incoming requests]. [Page 4, Line 27 – 28]
6. **Regarding dependent claims 4 and 22,**
- Application layer information comprises layer 7 information and above [different parts of the request, Page 1, Col. 2, Line 27 and different tasks, Page 1, Col. 2, Line 31].
- Applicants define “layer 7 information and above”, according to specification [Page 3, Line 32 to Page 4, Line 2], may be a type of request, a client identification, and individual user identification, and/or a cookie.
7. **Regarding dependent claims 5 and 21,**

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- The application layer information comprises at least one of a type of request, client identification, individual user identification, and a cookie [different parts of the request, Page 1, Col. 2, Line 27; IP address, Page 2, Col. 1, Line 5; cookie, Page 5, Col. 1, Line 28].

8. **Regarding dependent claim 6,**

- Hypertext Transport Protocol (HTTP) requests [native protocol, HTTP, Page 1, Col. 2, Line 35 – 36].

9. **Regarding dependent claim 10,**

- Determining if a second connection associated with a selected destination servers exists [a client accesses a DNS, Page 1, Col. 2, Line 19];
- Establishing the second connection to the selected destination server if the second connection does not exist [will not have response time data, Page 1, Col. 2, Line 20];
- Distributing a request to the selected destination servers over the second connection [return the IP server or list of servers with the lowest load, Page 1, Col. 2, Line 21 – 22];
- Repeating the determining, establishing and distributing for each of the requests [dedicated to different tasks, Page 1, Col. 2, Line 30 – 31].

10. **Regarding dependent claims 11 and 25,**

- Receiving, parsing, selecting and distributing are carried out by an application executing on a data processing system [EDDIE product suite runs on most existing Internet site configurations, Page 1, Col. 1, Line 29 – 30].

**11. Regarding independent claims 16, 31 and 33,**

- A method of distributing workload between servers. [Load-balances over a LAN, Page 1, Col. 2, Line 25]
- Each of the servers [internet servers, Page 1, Col. 2, Line 4] is executing an instance of an application [components, Page 1, Col. 2, Line 4] which communicates [cooperation, Page 1, Col. 2, Line 5] over a network [Internet, Page 1, Col. 2, Line 5]
- Each of HTTP requests [requests, Page 1, Col. 2, Line 26] within a single HTTP 1.1 connection [HTTP 1.1, Page 5, Col. 1, Line 5 – 6] to the application may be distributed [routes the different parts of the request, Page 1, Col. 2, Line 28] to any one of the servers [hosts, Page 1, Col. 2, Line 29],
- Defining a subset of the plurality of servers which are to receive HTTP requests having an indication of high priority [routes the different parts of the request to the hosts most suited to answer them, Page 1, Col. 2, Line 28 – 29];
- Establishing an HTTP 1.1 connection [HTTP 1.1, Page 5, Col. 1, Line 5 – 6] responsive to receiving a request for an HTTP 1.1 connection to the application over the network receive requests, Page 1, Col. 2, Line 26];
- Receiving a first Hypertext Transport Protocol (HTTP) request [listen to several UDP and/or TCP sockets] within the HTTP 1.1 connection [HTTP 1.1, Page 5, Col. 1, Line 5 – 6].
- Parsing the first HTTP request [parses any incoming data] to determine if the first HTTP request has an indication of high priority [most suited to answer them, Page 1, Col. 2, Line

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29] based on application layer information included in the first HTTP request [analyze incoming requests]; [Page 4, Line 26 – 28];

- Distributing the first HTTP request to one of the subset of the servers [routes the different parts of the request to the hosts, Page 1, Col. 2, Line 28 – 29] over a first connection [Front-ends, Page 4, Col. 1, Line 26] if the first HTTP request has an indication of high priority [most suited to answer them, Page 1, Col. 2, Line 29].

**12. Regarding dependent claim 17,**

- distributing the first HTTP request to a server other than a server in the subset of the destination servers if the first HTTP request does not have an indication of high priority. [The first time a client accesses a DNS server, the DNS server will not have response time data. It then returns the IP server or list of servers with the lowest load in a WAN, Page 1, Col. 2, Line 19 – 22].

**13. Regarding dependent claim 18,**

- Receiving a second HTTP request [listen to several UDP and/or TCP sockets] within the HTTP 1.1 connection [HTTP 1.1, Page 5, Col. 1, Line 5 – 6].
- Parsing the second HTTP request [parses any incoming data] to determine if the second HTTP request has an indication of high priority [most suited to answer them, Page 1, Col. 2, Line 29] based on application layer information included in the second HTTP request [analyze incoming requests]; [Page 4, Line 26 – 28]

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- Distributing the second HTTP request to one of the subset of the servers [routes the different parts of the request to the hosts, Page 1, Col. 2, Line 28 – 29] over a second connection [Front-ends, Page 4, Col. 1, Line 26] if the second HTTP request has an indication of high priority [most suited to answer them, Page 1, Col. 2, Line 29]; and
- Repeating [dedicate, Page 1, Line 2, Line 30 – 31] the receiving, parsing and distributing steps for each subsequent HTTP request received [receives requests, decodes them, and separate the different part of the request, Page 1, Col. 2, Line 26 – 27] within the HTTP 1.1 connection [HTTP 1.1, Page 5, Col. 1, Line 5 – 6].

**14. Regarding dependent claim 19,**

- Determining a load [overload] associated with respective servers in the subset of the servers [local back-ends]; [Page 4, Col. 1, Line 30 – 35]
- Distributing the first HTTP request [schedule requests] to the server in the subset of the servers [back-ends on a remote LANs] based on the determined load [overload]. [Page 4, Col. 1, Line 30 – 35]

**15. Regarding dependent claim 23,**

- Determining a start point and an end point [schedule] for the first HTTP request [incoming requests] within the HTTP 1.1 connection [HTTP 1.1, Page 5, Col. 1, Line 5 – 6]; [Page 4, Line 28 – 29]
- Identifying application layer information [parses any incoming data] within the first HTTP request [incoming requests]. [Page 4, Line 27 – 28]



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- Determining if the application layer information is relevant application layer information.  
[Routes the different parts of the request to the hosts most suited to answer them, Page 1, Col. 2, Line 28 – 29]

16. **Regarding dependent claim 24,**

- Determining if a first connection exists [first time a client accesses a DNS, Page 1, Col. 2, Line 19];
- Establishing the first connection if the first connection does not exist [will not have response time data, Page 1, Col. 2, Line 20];
- Distributing the first HTTP request over the first connection [return the IP server or list of servers with the lowest load, Page 1, Col. 2, Line 21 – 22].

**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

17 **Claims 7 – 9, 12 – 15, 20 – 22, and 26 – 29 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Dahlin, and in view of Mohit Aron et al. (“Efficient Support For P-HTTP in Cluster-Based Web Servers”, Department of Computer Science, Rice University, June, 1999, and referred to as Aron hereinafter).

(Dahlin as set forth above generally discloses the basic inventions.)

18. **Regarding Claim 7**, Dahlin teaches determining if the application layer information associated with each requests is relevant application layer information. [Routes the different parts of the request to the hosts most suited to answer them, Page 1, Col. 2, Line 28 – 29]

Dahlin does not teach selecting one of a subset of the destination servers if the application layer information associated with each of the plurality of requests is relevant application layer information; and selecting a destination server other than a destination server in the subset of the destination servers if the application layer information associated with each of the plurality of requests is not relevant application layer information.

Aron teaches selecting one of a subset of the destination servers if the application layer information associated with each of the plurality of requests is relevant application layer information; and selecting a destination server other than a destination server in the subset of the destination servers if the application layer information associated with each of the plurality of requests is not relevant application layer information. [Page 3, Fig. 1]

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Dahlin to include "selecting one of a subset of the destination servers if the application layer information associated with each of the plurality of requests is relevant application layer information; and selecting a destination server other than a destination server in the subset of the destination servers if the application layer information associated with each of the plurality of requests is not relevant application layer information" for the requests to find the requested targets.

**19. Regarding Claim 8,**

- Determining a load [overload] associated with respective destination servers in the subset of destination servers [local back-ends]; and selecting the destination server in the subset of the destination servers [schedule requests to back-ends on remote LANs] based on the determined load [overload]. [Page 4, Col. 1, Line 30 – 35]

**20. Regarding Claims 9 and 20,**

- The subset of destination servers includes one server [hosts] which is to receive requests [routes the different parts of the request] having an indication of high priority [most suited to answer them]. [Page 1, Col. 2, Line 28 – 29]
- The indication of high priority [most suited to answer them, Page 1, Col. 2, Line 29] is determined based on [front-end analyze incoming requests and schedule them, Page 4, Col.

1, Line 28 – 29] the existence and nonexistence of relevant application layer information [same host or on the other hosts, Page 4, Col. 1, Line 28 – 30].

21. **Regarding Claims 12 and 26**, Dahlin teaches a method [eddie product suite, Page 1, Col. 1, Line 21]

Dahlin does not teach tracking the requests and corresponding responses to the requests.

Aron teaches tracking the requests and corresponding responses to the requests [a request arrives on a client connection, the front-end assigns the request, and forwards the client's HTTP request message on the appropriate back-end connection. When the response arrives from the back-end node, the front-end forwards the data on the client connection, Page 3, Col. 2, Line 18 – 23], for the purpose of forwarding the server's responses back to the clients who made requests.

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Dahlin to include "tracking the requests and corresponding responses to the requests" for the purpose of forwarding the server's responses back to the clients who made requests.

22. **Regarding Claims 13 and 27**,

Dahlin teaches routing the requests using network address translation [routes the different parts of the request to the hosts, Page 1, Col. 2, Line 28 – 29].

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Dahlin does not teach a routing layer of a communication protocol stack.

Aron teaches a routing layer [user-level processes, Page 10, Col. 1, Line 22] of a communication protocol stack [protocol stacks, Page 10, Col. 1, Line 23], for the purpose of providing a control session.

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Dahlin to include "a routing layer of a communication protocol stack" for the purpose of providing a control session.

**23. Regarding Claims 14 and 28,**

Dahlin teaches routing the requests using network address translation [routes the different parts of the request to the hosts, Page 1, Col. 2, Line 28 – 29].

Dahlin does not teach using session control translation at the routing layer of the communication protocol stack.

Aron teaches using session control [control session, Page 10, Col. 1, Line 34] translation at the routing layer [user-level processes, Page 10, Col. 1, Line 22] of the communication protocol stack [protocol stacks, Page 10, Col. 1, Line 22 – 23].

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It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Dahlin to include "using session control translation at the routing layer of the communication protocol stack" for the purpose of providing a control session.

**24. Regarding Claims 15 and 29,**

Dahlin teaches routing the requests using network address translation [routes the different parts of the request to the hosts, Page 1, Col. 2, Line 28 – 29].

Dahlin does not teach routing the corresponding responses to the requests using network address translation at a routing layer of a communication protocol stack.

Aron teaches routing the corresponding responses to the requests [sending multiple server responses, Page 2, Col. 1, Line 29] using session control [control session, Page 10, Col. 1, Line 34] translation at the routing layer [user-level processes, Page 10, Col. 1, Line 22] of the communication protocol stack [protocol stacks, Page 10, Col. 1, Line 22 – 23], for the purpose of forwarding the server's responses back to the clients who made requests.

It would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Dahlin to include "routing the corresponding responses to the requests using network address translation at a routing layer of a communication

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protocol stack” for the purpose of forwarding the server’s responses back to the clients who made requests.

**Conclusion**


25. The prior art made of record and not relied upon is considered pertinent to applicant’s disclosure. Hong et al. (U.S. Pub. No. 2002/0062372) discloses a communication network a network switch, servers, a cache server, and a relative degree. Spinney et al. (U.S. Patent No. 6,426,943) discloses an application-level data, a data communication switch, a first packet, determining type of flow, a priority queue, and processing packets.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sunray Chang whose telephone number is 703-305-8744 or after October 12, 2004 at (571) 272-3682. The examiner can normally be reached on M-F 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Anthony Knight can be reached on (703)308-3179 or after October 12, 2004 at (571) 272-3687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-746-3506.

Sunray Chang  
Patent Examiner

  
Anthony Knight  
Supervisory Patent Examiner  
Group 3600

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September 16, 2004